



# **IMPROVED STANDARDS FOR PERFORMANCE BASED SUPPORTABILITY**

**Presented by**

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**A L E**

# **PRESENTATION OVERVIEW**

- : History of Supportability Standards**
- : Performance Based Supportability**
- : Supportability Standard Development**
  - 8 Objective**
  - 8 Approach**
  - 8 Implementation**

# **HISTORY OF SUPPORTABILITY STANDARDS**

- : MIL-STD-472 - Maintainability Analysis**
- : DARCOM PAM 750-16 - DARCOM Guide to Logistics Support Analysis**
- : MIL-STD-1388-1, MIL-STD-1388-1A LSA**
- : The Perry Initiative 29 JUN 94**
- : SOLE Supportability Re-Engineering Committee**
- : Early Commercial Supportability Standard Efforts**

***We've come a long way, but  
there is a long way to go***

# PERFORMANCE BASED SUPPORTABILITY



*A Systems  
Approach to  
Availability*



# PERFORMANCE BASED SUPPORTABILITY OBJECTIVE

Change the mind set from:

- ◆ Large volumes of analysis and data
- ◆ Supportability as a separate discipline
- ◆ Supportability being “equal” with performance
- ◆ Supportability being good if you can afford it

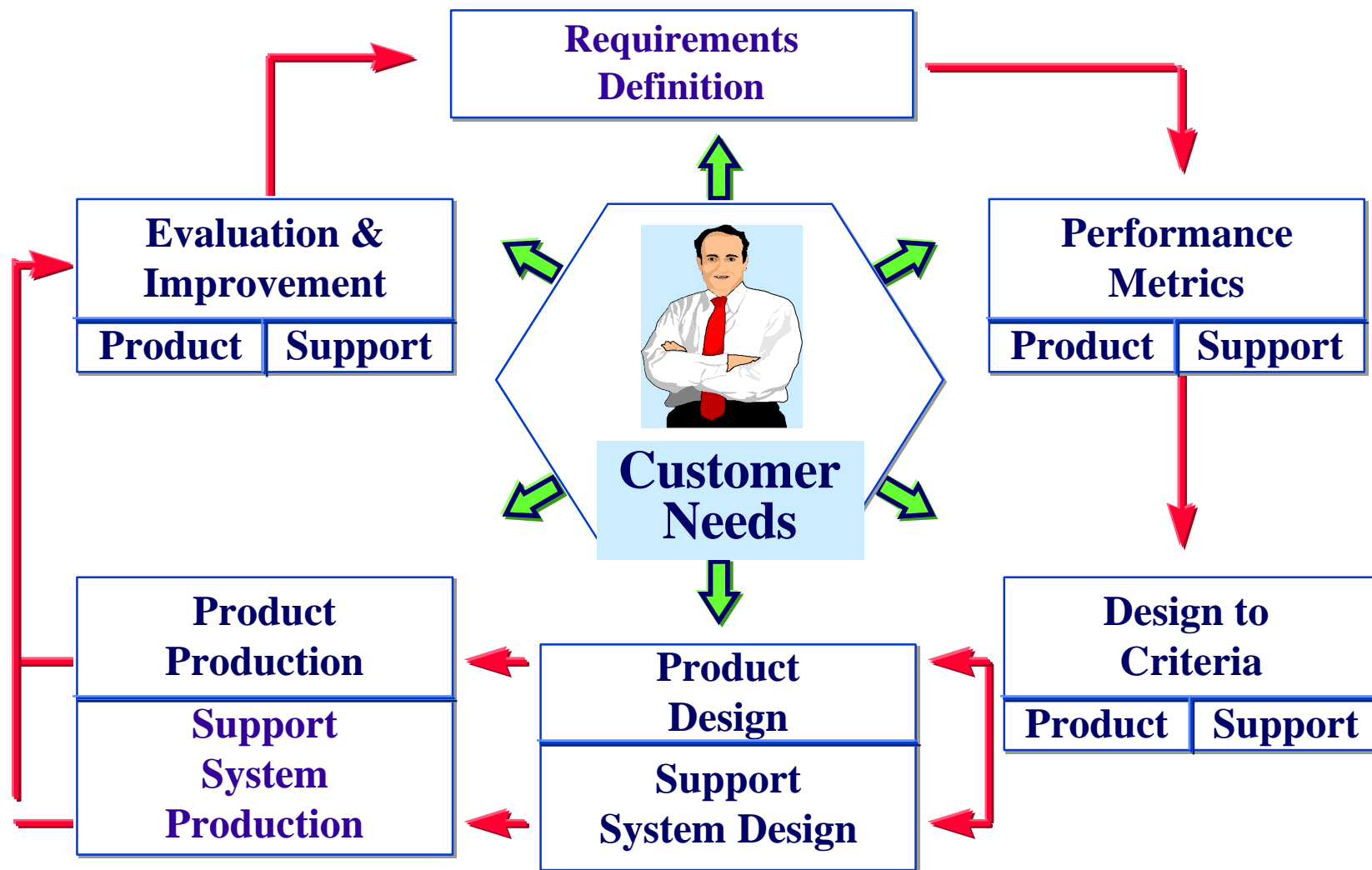
To:

- ◆ Supportability as a performance measure
- ◆ Supportability allocation as a systems engineering responsibility
- ◆ Design for supportability as a design responsibility
- ◆ Support system design is a logistics engineering responsibility
- ◆ Operating support systems as a product support function

***All Done as an Integrated Product Team***

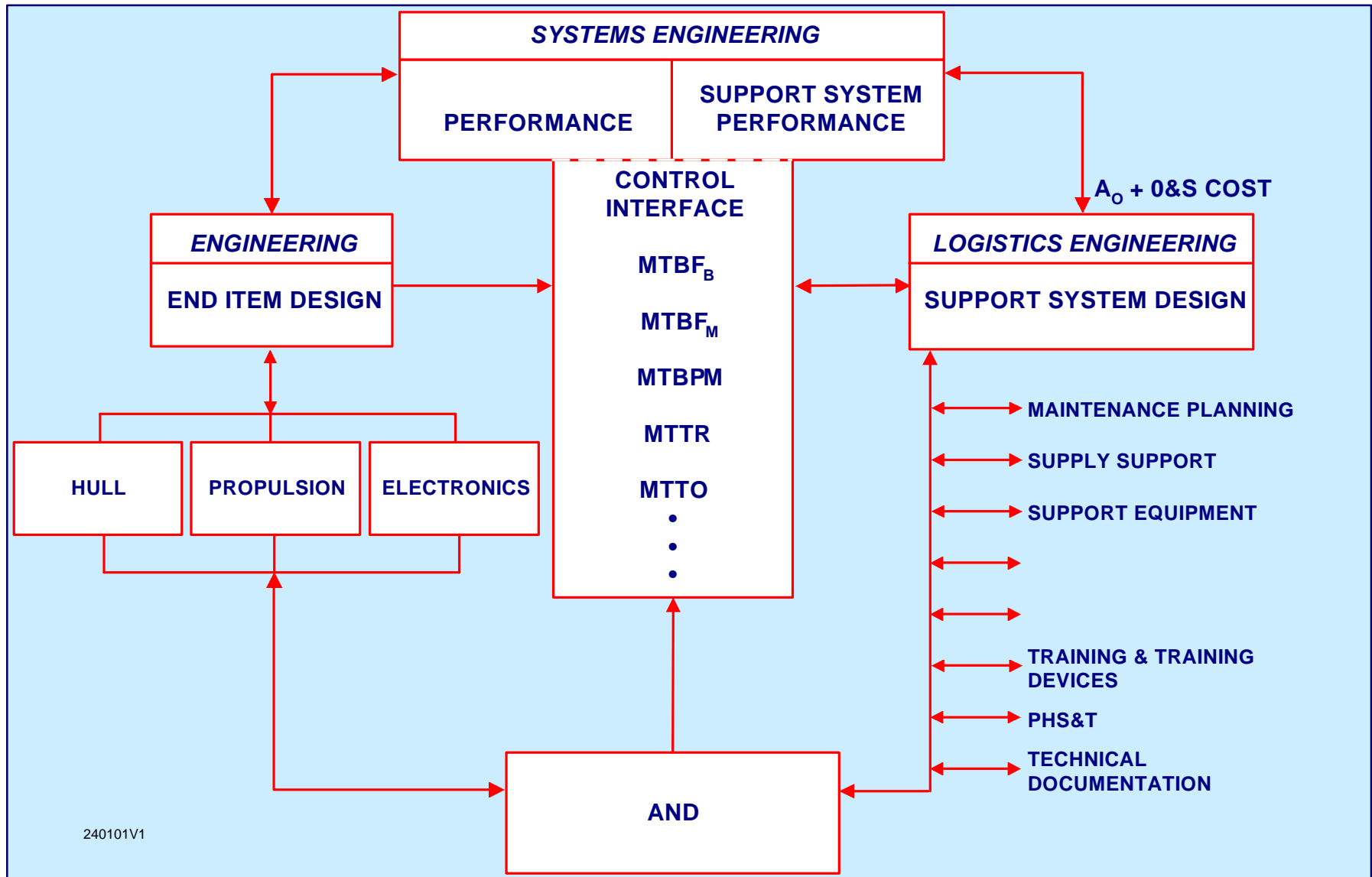


# PERFORMANCE BASED SUPPORTABILITY (A Concurrent Engineering Process)



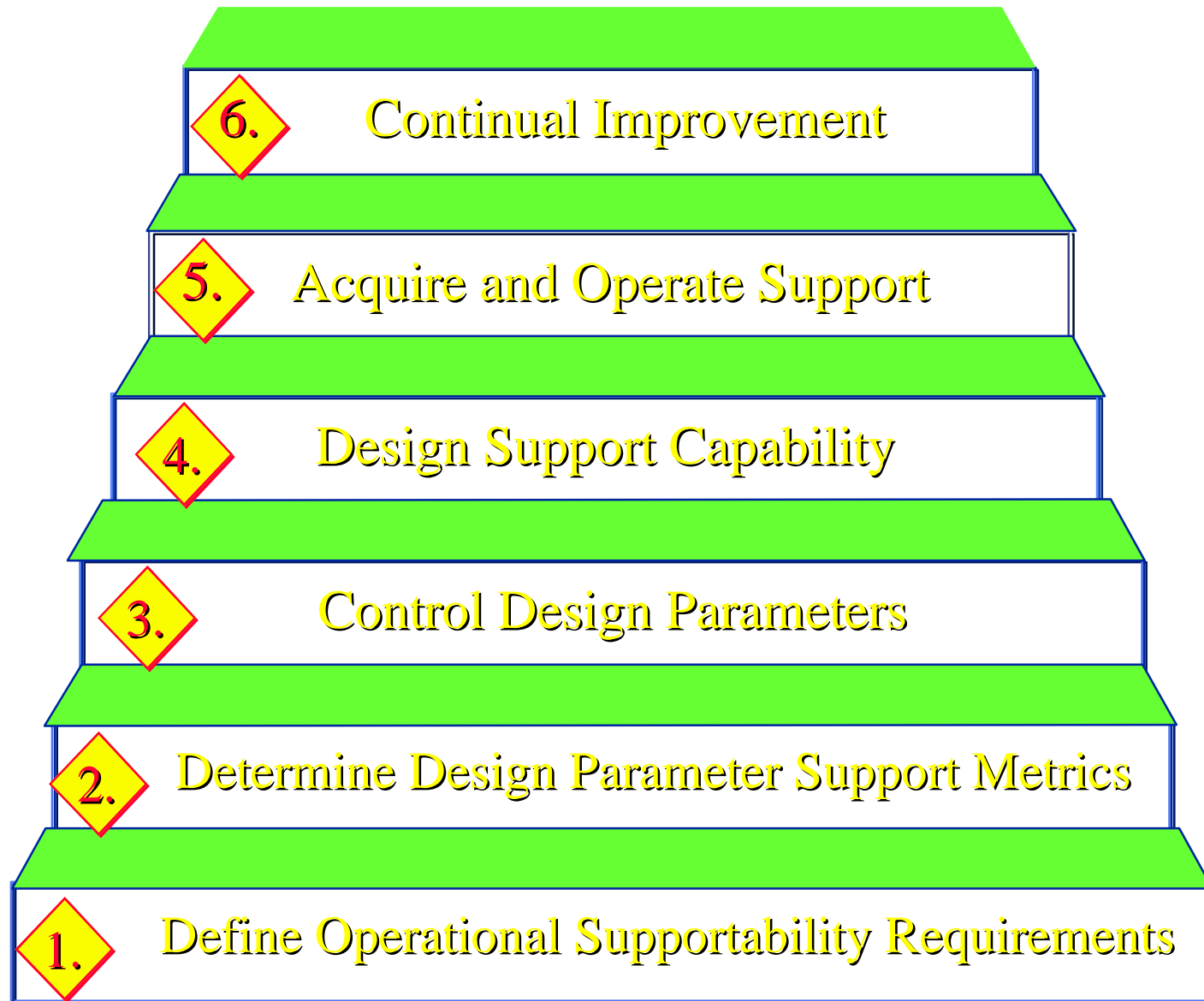
***Supportability is Designed In Not Analyzed In***

# PERFORMANCE BASED DESIGN, A CLOSED LOOP SYSTEM



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## SIX STEPS OF PBS





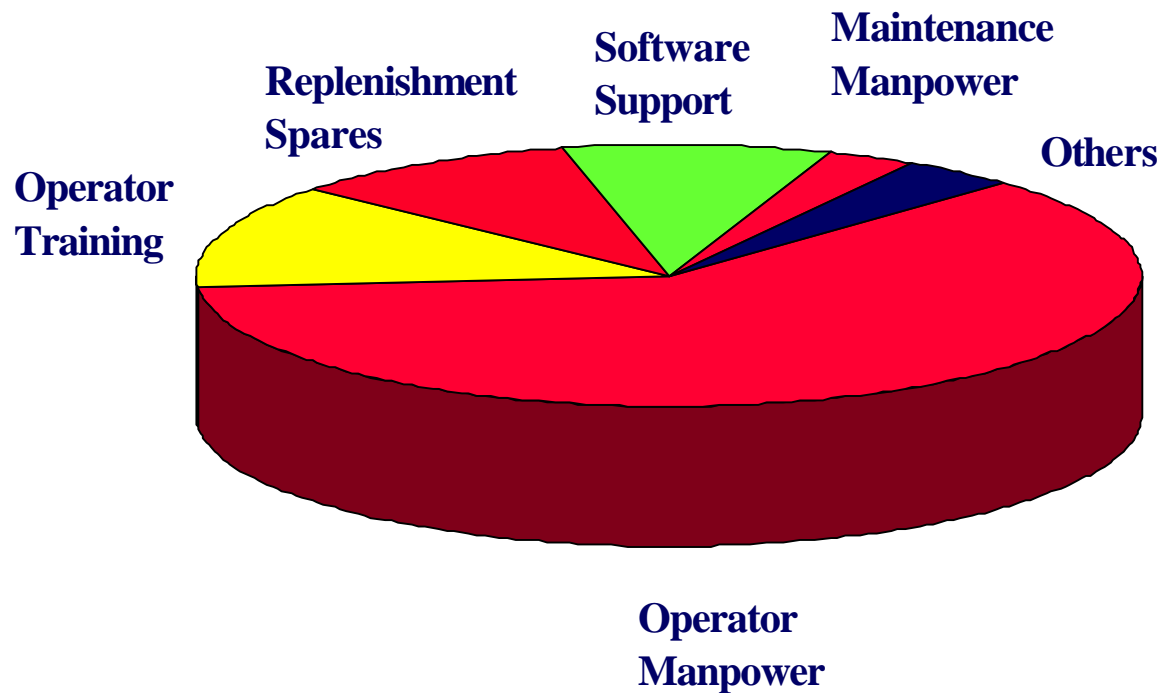
# Sample Program

## Communication Management System

- ◆ Completed Steps 1, 2, & 3
- ◆ Determined O&S Cost Drivers
  - Operator Manpower & Training - 74% of O&S Cost
- ◆ Established Design Requirements to Control
- ◆ O&S Cost
  - Operator Manpower  $\leq$  \$3.3 M (over 25 years)
  - Operator Training  $\leq$  \$700 K (over 25 years)
- ◆ Converted Design Requirements to Design Parameters
- ◆ Expected Cost Avoidance: More Than The System Cost



# O&S Cost Distribution For Previous Item





# Communication Management System

## Design & Support System

### Design Parameters

#### PARAMETER

#### VALUE

##### **Equipment Design Related:**

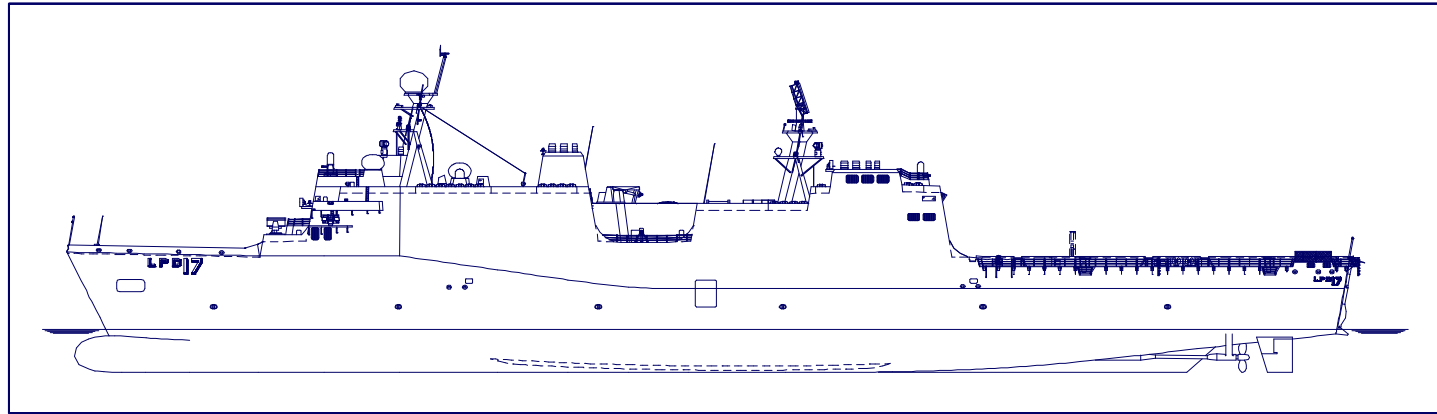
Mean Time to Operate Equipment (MTTOE)	12 seconds or less
Mean Time Between Maintenance Actions (Corrective)	800 aircraft flight hours or more
Mean Time to Repair (on A/C)	15 minutes or less
Mean Time to Repair (off A/C)	8 hours or less
Preventive Maintenance Requirements	None
Testability/Built-In Test	Refer to Supplier SOW para. 9.7-9.8

##### **Support System Related:**

Remoteness from Maintenance	15 minutes or less
Spares Fill Rate	95%
Mean Time To Obtain Spares 1 <sup>st</sup> Line	15 Minutes or less
Mean Time To Obtain Spares 2 <sup>nd</sup> Line	6 hours or less
Operator Trainig Course Duration	4 hours or less

# Sample Program

## Marine Amphibious Assault Vessel



- ◆ **Proposal Phase PBS - Steps 1, 2, & 3**
- ◆ **Selected Suppliers Based on Equipment Performance Against Established Design Criteria**
- ◆ **Developed a System With a 40% Reduction in the Cost-of-Ownership**

## WHAT WE NEED TO MAKE IT WORK

- **Train Senior Managers on potential for cost of ownership reductions through PBS**
- **Train Systems and Design Engineers on how to utilize PBS effectively**
- **Train Logistics Engineers on how to effectively operate in a concurrent engineering environment**

# SOLE PBS TRAINING PROGRAMS

- **1/2-day session for executives**
  - ◆ (What PBS is all about)
- **3-day session for technical managers**
  - ◆ (How to put PBS to work)
- **5-day session for engineers and product support teams**
  - ◆ (How to apply PBS to specific programs)

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# **SUPPORTABILITY STANDARD** **DEVELOPMENT**

- : Objectives**
- : Approach**
- : Implementation**

# **SUPPORTABILITY STANDARD OBJECTIVES**

- : Define supportability, its metrics and means of evaluation or measurement**
- : Enhance supportability communications between buyer and seller**
- : Enhance communication across segments of commerce**

***The Standard must add value  
to products or processes***

# **STANDARD DEVELOPMENT APPROACH**

**: Keep it:**

- 8 Simple**
- 8 Aligned with ISO criteria**
- 8 Performance based**
- 8 Industry-wide**
- 8 Current with technology and business**

## **IMPLEMENTATION**

- : Work within SAE G-11 Supportability Committee**
- : Solicit industry and government inputs**
- : Develop a draft Standard**
- : Encourage use and comment**
- : Formalize the Standard**

***The Standard must capitalize  
on Best Industry Practices***